



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,298	03/09/2004	Mark D. Elkovitch	134380-2	4441

23413 7590 10/11/2006

CANTOR COLBURN, LLP
55 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

EXAMINER

THOMAS, JAISON P

ART UNIT PAPER NUMBER

1751

DATE MAILED: 10/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/797,298

Applicant(s)

ELKOVITCH, MARK D.

Examiner

Jaison P. Thomas

Art Unit

1751

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-42 is/are pending in the application.
- 4a) Of the above claim(s) 25-40 and 42 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 and 41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>8/04, 1/05, 5/05, 8/05, 8/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C.

121:

- I. Claims 1-24 and 41, drawn to composition and article made from the composition, classified in class 252, subclass 500.
- II. Claims 25-40 and 42, drawn to method of making the composition and an article made from the composition, classified in class 523, subclass 351.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process of making and product made.

The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by creating a solution containing a polymer precursor, carbon nanotubes and the dispersion agent and subsequently polymerizing the precursor to form the final product.

3. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

Art Unit: 1751

4. Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions require a different field of search (see MPEP § 808.02), restriction for examination purposes as indicated is proper.

During a telephone conversation with David Rodrigues on 9/1/2006 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-24 and 41. Affirmation of this election must be made by applicant in replying to this Office action. Claims 25-50 and 42 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-17,20-24 and 41 are rejected under 35 U.S.C. 102(b) as being anticipated by Shibuta (WO 97/15935).

Shibuta teaches a transparent electrically conductive film containing an organic or inorganic matrix having carbon microfibers and an electrically conductive metal oxide powder dispersed therein (Abstract). Carbon fibrils that are used in the invention are described in US Patent 4663230, which are

Art Unit: 1751

incorporated by reference (pg. 5., line 2-3). Patent '230 describes carbon fibrils being made from a dispersion containing a carbon containing compound and a metal particle catalyst (Abstract) wherein the catalyst contains iron, nickel or cobalt (Column 3, line 50) (which examiner construes as creating nanotubes with impurities meeting the limitations of Claims 9,10, and 15). Shibuta describes the organic matrix as being a variety of polymers disclosed on pg. 8, lines 16-29 and the binder can be used alone or with another unreactive resin (pg. 9, lines 28-30) (which examiner construes as inherently resulting in a blended resin having a phase separated morphology such that carbon nanotubes will migrate to the resin component in which it has a higher miscibility as required by Claim 17). Shibuta also describes the conductive metal oxide particles as including titanium oxide wherein particle sizes of the said metal oxide can be smaller than 0.1 micron (pg. 7, lines 10-17) and are present in the composition from 1 to 30 weight percent (pg. 7, lines 27-29).

With respect to the physical characteristics of the carbon nanotubes as recited in Claims 1,3-8,11-14 and 20, the examiner respectfully submits that the prior art inherently meets the claimed limitation. Specifically, the reference teaches identical components and is produced in the same/similar manner and would inherently possess above limitations.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1751

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-8 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibuta as applied to claims 1-3,9,10,15-17,20-24 and 41 above, in view of Applied Nanotech Inc. (ANI) webpage (<http://www.applied-nanotech.com/cntproperties.htm>).

Shibuta is relied upon as disclosed above. However, Shibuta is silent with respect to the rope configurations, metallic versus semi-conducting nanotubes, or nanotube conformations (armchair versus zig-zag).

The ANI webpage teaches a summary of the common physical parameters of carbon nanotubes including tube diameters (1-50 nm) (pg. 1), carbon nanotube chirality and different configurations (armchair vs. zigzag) and their relationship to the conductive properties to the nanotube (metallic vs. semiconducting, respectively) as well as the suggestion that even in a group of nanotubes containing random chirality, up to 1/3 of the resulting tubes could have metallic (armchair) type configurations (pg. 3) which examiner construes as inherently possessing a ballistic type of electron transport. The webpage also shows a picture illustrating a bundle of eight single-walled nanotubes (pg. 2) which examiner construes as constituting a rope structure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to understand that the carbon nanotubes of. would posses

Art Unit: 1751

the physical properties required by Claims 4-8 and 11-15 as the ANI webpage teaches the common physical properties of carbon nanotubes.

With respect to the rope limitations of Claims 5-8, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the number of carbon nanotubes of Shibuta. As to optimization results, a patent will not be granted based upon the optimization of result effective variables when the optimization is obtained through routine experimentation unless there is a showing of unexpected results which properly rebuts the prima facie case of obviousness. See *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980). See also *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990), and *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Allowable Subject Matter

8. Claims 18 and 19 are allowable over the prior art of record. Specifically, the art does not teach nor suggest the use of functionalized nanotubes in conjunction with a polymer and a nanosized dispersion agent.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaison P. Thomas whose telephone number is (571) 272-8917. The examiner can normally be reached on Mon-Fri 8:30 am to 5:00 pm.

Art Unit: 1751

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglas McGinty can be reached on (571) 272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jaison Thomas
Examiner
9/1/2006

JT


Mark Kopeck
Primary Examiner